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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.          | CONFIRMATION NO. |
|--|-------------|----------------------|------------------------------|------------------|
| 09/768,726   | 01/24/2001  | Bassel Beidas        | PD-200316                    | 1223             |
| 7590 01/26/2005  |             |                      |                              |                  |
| Hughes Electronics Corporation<br>Patent Docket Administration<br>P.O. Box 956<br>Bldg. 1, Mail Stop A109<br>El Segundo, CA 90245-0956 |             |                      | EXAMINER<br>MURPHY, RHONDA L |                  |
|  |             |                      | ART UNIT<br>2667             | PAPER NUMBER     |
| DATE MAILED: 01/26/2005  |             |                      |                              |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                               |  |
|------------------------------|-------------------------------|-------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>09/768,726 | Applicant(s)<br>BEIDAS ET AL. |  |
|                              | Examiner<br>Rhonda Murphy     | Art Unit<br>2667              |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 September 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-7,16,17,22-25,30-33,42,43 and 48-51 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22-25 and 48-51 is/are allowed.
- 6) ☒ Claim(s) 1-3,5-7,16,17,30-33,42 and 43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Amendment***

1. This communication is responsive to the amendment filed on September 29, 2004. Accordingly, claims 4, 8-15, 18-21, 26-29, 34-41 and 44-47 have been cancelled and claims 1-3, 5-7, 16-17, 22-25, 30-33, 42-43 and 48-51 are currently pending in this application.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 5-7 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishimura (US 6,493,360) and Dent (US 6,023,477), and in further view of Wakabayashi (US 6,643,342).

**Regarding claims 1 and 30**, Nishimura teaches a system for providing a synchronization signal to a terminal which is adapted for use in a communications network, the system comprising: a transmitter for transmitting to a terminal (**reception circuit**, Fig. 2) a signal including a plurality of frames (col. 5, lines 33-35, Fig. 1), each of said frames including at least one time slot (see Fig. 1), wherein said transmitter includes a respective portion of said synchronization signal in at least one said time slot of a plurality of said frames (col. 6, lines 52-53), said synchronization signal including

Art Unit: 2667

data which is adapted for use by said terminal to control transmission timing of said terminal (col. 5, lines 33-52).

Nishimura fails to explicitly teach frames within a superframe. However, Dent teaches arranging respective groups of frames into a respective superframe (col. 6, lines 30-33). It would have been obvious to one having ordinary skill in the art at the time the invention was made, to modify the system of Nishimura, by arranging groups of frames into superframes, in order to provide a longer frame structure for frame synchronization.

Furthermore, Nishimura fails to explicitly teach unique phase signals within each frame of a superframe. However, Wakabayashi teaches a portion of a synchronization signal in each frame comprising a respective phase signal that is unique for each respective frame within a particular superframe (Fig. 4; col. 3, lines 13-20; wherein the respective phase signal is represented by pseudo noise codes). In view of this, it would have been obvious to one having ordinary skill in the art at the time the invention was made, to modify the system of Nishimura and Dent, by incorporating Wakabayashi's teachings of pseudo noise codes within each frame, for the purpose of properly detecting a pattern, reducing transmission speed and decreasing the time required to establish synchronization (col. 3, lines 50-52, 63-67).

**Regarding claim 2**, Nishimura further teaches the method wherein said including step includes in each of said frames said respective portion of said synchronization signal in at least one time slot (col. 5, lines 33-52, Fig. 1).

**Regarding claim 3**, Nishimura further teaches the method wherein said including step includes said portion of said synchronization signal in each said frame, such that said synchronization signal comprises a unique word signal that is substantially the same in each frame (col. 5, lines 33-35; col. 6, lines 52-53).

**Regarding claims 5 and 31**, Nishimura and Dent teach a system of providing a synchronization signal to a terminal, in which the frames are grouped into a superframe structure. Furthermore, Nishimura and Dent teach transmitting the start of each superframe such that it substantially coincides with the start of one of the frames. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to correspond the starting of each superframe with the starting of one of the frames, since each superframe begins with one frame. Thus, coinciding the start of the frame and superframe and providing a synchronization pattern.

**Regarding claims 6 and 32**, Nishimura and Dent teach a system of providing a synchronization signal to a terminal, in which the frames are grouped into a superframe structure. Furthermore, Nishimura and Dent teach transmitting the start of each frame such that it substantially coincides with the start of one of the time slots. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to correspond the starting of each frame with the start of each time slot, since each frame consist of at least one time slot and the time slot being located at the beginning of each frame.

**Regarding claims 7 and 33**, Nishimura, Dent and Wakabayashi teach a system of providing a synchronization signal to a terminal, in which the frames include phase

Art Unit: 2667

signals and are grouped into a superframe structure. Furthermore, Nishimura, Dent and Wakabayashi teach phase signals in the frames of the superframes in the same order for each superframe. It would have been obvious to one having ordinary skill in the art at the time the invention was made, to provide a repetitive sequence of phase signals for each superframe, in order to track the sequence of phase signals and establish synchronization.

4. Claims 16 - 17 and 42 - 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakabayashi (US 6,643,342), in view of Dent (US 6,023,477).

**Regarding claims 16 and 42**, Wakabayashi teaches generating a synchronization signal as a plurality of unique phase signals (Fig. 4, col. 3, lines 13-20); and transmitting a communication signal to the terminal (col. 4, lines 50-54), the communication signal comprising a plurality of frames (it is known in the art that communication signals contain a plurality of frames), a portion of each frame comprising a respective one of the plurality of unique phase signals (Fig. 4; col. 3, lines 13-20; wherein the unique phase signal is represented by pseudo noise codes).

Wakabayashi fails to explicitly teach superframes. However, Dent teaches the communication signal comprising a plurality of superframes (Fig. 1; col. 6, lines 30-33), each superframe comprising a plurality of said frames (Fig. 1) such that the order of unique phase signals in each frame repeats in every superframe (Wakabayashi, col. 3, lines 13-20); and wherein the number of frames per superframe is equal to the number of unique phase signals (it would be obvious to one skilled in the art to equate the

Art Unit: 2667

number of frames in each superframe to that of unique phase signals, since the unique phase signals are repeated in each frame, and those frames compose the superframe).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made, to modify the system of Wakabayashi, to incorporate Dent's teaching of superframes, in order to provide a longer frame structure for frame synchronization.

**Regarding claims 17 and 43**, Wakabayashi teaches generating a synchronization signal as a plurality of unique phase signals (Fig. 4, col. 3, lines 13-20); and transmitting a communication signal to the terminal (col. 4, lines 50-54), the communication signal comprising a plurality of frames (it is known in the art that communication signals contain a plurality of frames), a portion of each frame comprising a respective one of the plurality of unique phase signals (Fig. 4; col. 3, lines 13-20; wherein the unique phase signal is represented by pseudo noise codes).

Wakabayashi fails to explicitly teach superframes. However, Dent teaches the communication signal comprising a plurality of superframes (Fig. 1; col. 6, lines 30-33), each superframe comprising a plurality of said frames (Fig. 1) such that the order of unique phase signals in each frame repeats in every superframe (Wakabayashi, col. 3, lines 13-20); and wherein the transmitting step transmits the communication signal such that the beginning of each superframe substantially coincides with the beginning of one of said frames (it would have been obvious to one having ordinary skill in the art at the time the invention was made, to correspond the starting of each superframe with the starting of one of the frames, since each superframe begins with one frame).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made, to modify the system of Wakabayashi, to incorporate Dent's teaching of superframes, in order to coincide the start of the frame and superframe while providing a synchronization pattern.

***Allowable Subject Matter***

5. Claims 22-25 and 48-51 are allowed. Prior art does not teach the following limitations: **Regarding claim 22**, (e) repeating steps (a)-(d) while the correlation value is below a frequency acquisition threshold, and when said correlation value is at least equal to said frequency acquisition threshold, performing the steps of:

- (f) determining an arrival time of the unique word signal in a first frame;
- (g) estimating an estimated arrival time of the unique word signal in a second frame based on the arrival time of the unique word signal in said first frame;
- (h) determining the actual arrival time of the unique word signal in said second frame;
- (i) calculating a difference between the estimated arrival time and the actual arrival time;
- (j) adjusting a voltage controlled oscillator (VCO) frequency based on said difference;
- (k) repeating steps (f)-(j) while said difference is not below a timing acquisition threshold to determine acquisition of said communication signal.

**Regarding claim 48**, (c) determine the actual arrival time of the unique word signal in said second frame; (d) calculate a difference between the estimated arrival time and the actual arrival time; (e) adjust a VCO frequency based on said difference, and



Art Unit: 2667

(f) repeat functions (a)-(e) on subsequent frames if said difference is not below a timing acquisition threshold value.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-3, 5-7, 16-17, 30-33 and 42-43 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

\*Atarius (US 6,278,699) discloses synchronization techniques and systems for spread spectrum radio communications.

\*Carneheim et al. (US 2001/0000701) discloses multi-frame synchronization for parallel channel transmissions.

\*Haugli et al. (US 5,991,279) discloses a wireless packet data distributed communications system.

\*Unno (US 6,577,647) disclose a synchronization system and method, and recording medium.

\*Junell (US 5,953,649) discloses signal acquisition in a satellite telephone system.

\*Rohani (US 6,157,631) disclose a method and system for generating and using synchronized and unsynchronized spread spectrum signals in a cellular communication system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rhonda Murphy whose telephone number is (571) 272-3185. The examiner can normally be reached on Monday - Friday 8:00 - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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**RICKY NGO**  
**PRIMARY EXAMINER**